Five Years of Funding Open Access APCs: Where Did the Money Go?

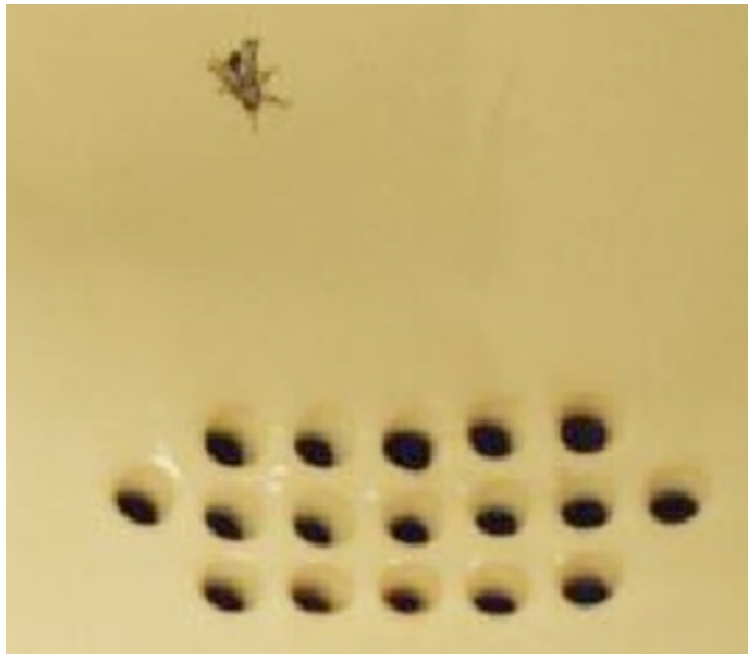
Jere Odell, Hima Varsha Anne
IUPUI University Library Center for Digital Scholarship
jdodell@iupui.edu

2018 ALI Scholarly Communication Librarianship Conference
Indianapolis, IN
October 26, 2018

Overview

- What is the IUPUI OA Fund?
  - How is it managed?
  - Summary of expenditures
- What are we doing with the data about the Fund?
- Methods
- Visualizations
- Discussion of what's next
- Questions

What would you do with $3,000.00 to increase OA adoption?



What is the IUPUI Open Access Fund?

http://www.ulib.iupui.edu/digitalscholarship/openaccess/oafund

Fund Requirements & Limits

- At least one IUPUI affiliated author (faculty member or graduate student)
- Fully OA journals (no “hybrid” OA)
- Journal indexed in DOAJ / publisher a member of OASPA
- Article is (at least) in the submitted stage
- Prorated support if coauthors are not affiliated with IUPUI
  - (support = APC x IUPUI/All)
- Support capped at $3,000.00 per article
- Onetime exception for grant-funded research
- Published article will be archived in IUPUI ScholarWorks

Some exceptions

- 1 monograph
- 2 full conference proceedings (1 published; 1 in press)
- Prorated support calculated generously (former students, unaffiliated scholars, LMICs)
- Onetime exception for funded research per: Author? Grant?

History and Mission

Compact for Open-Access Publishing Equity

2009

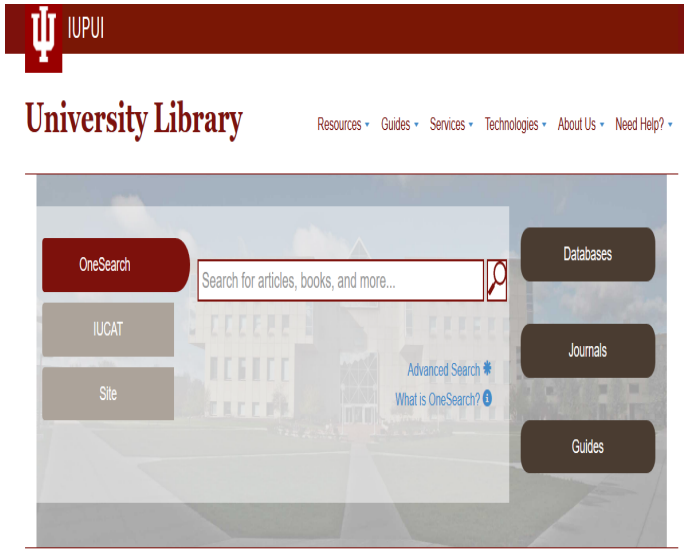
The compact for open-access publishing equity supports equity of the business models by committing each university to "the timely establishment of durable mechanisms for underwriting reasonable publication charges for articles written by its faculty and published in fee-based open-access journals and for which other institutions would not be expected to provide funds."

http://www.oacompact.org/

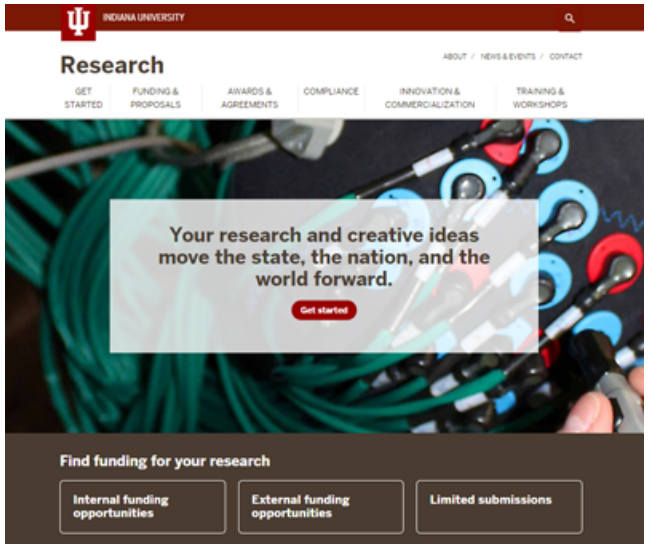
https://sparcopen.org/our-work/oa-funds/

Initial 2 Year Pilot

$47,000 spent on 35 articles in 19 months



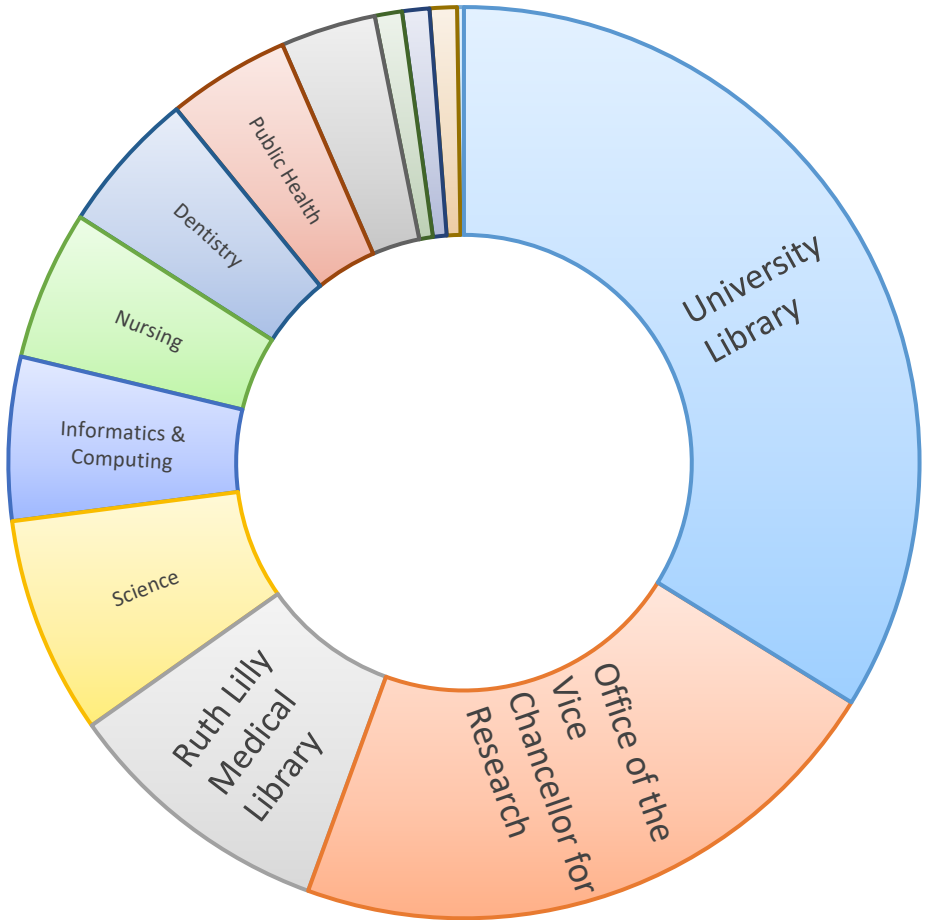
+



$25K

$15K

Where did the money come from?



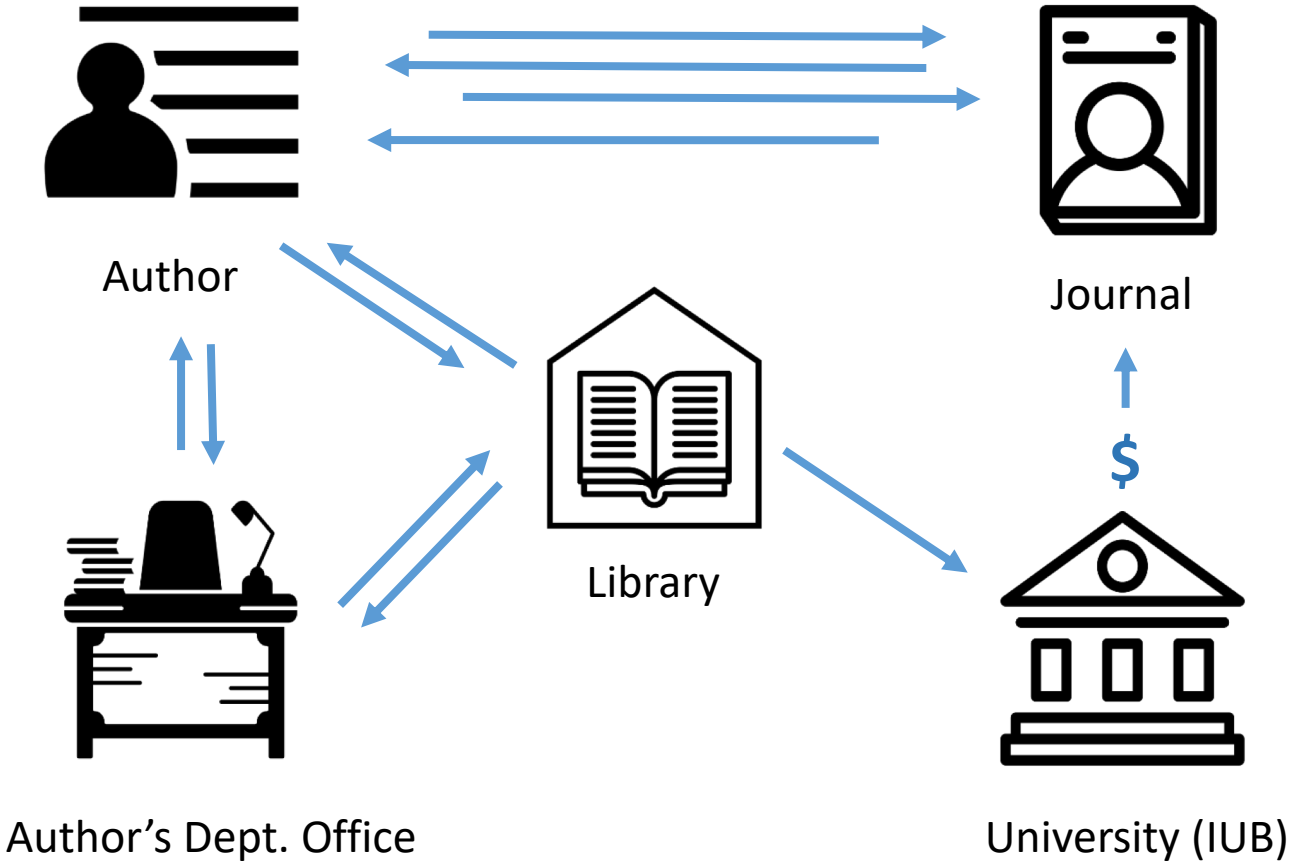
University Library	$70,000.00
Office of the Vice Chancellor for Research	$45,000.00
Ruth Lilly Medical Library	$20,000.00
Science	$16,000.00
Informatics & Computing	$12,000.00
Nursing	$11,000.00
Dentistry	$10,500.00
Public Health	$9,000.00
Engineering & Technology	$7,000.00
Law	$2,000.00
SPEA	$2,000.00
Health Sciences	$2,000.00
Philanthropy	$500.00

Contributions 2013-2018
$207,000.00

How is the Fund managed?

1. Author applies for funds
2. Library reviews application and sets funding-level
3. Author sends invoice to library
4. Library pays invoice
   - with a check (mailed from IU Bloomington)
   - fee for check covered by library
   - full invoice?/split invoice?/reimburse?
5. Article published
6. Article archived

Minor Headaches in Managing Fund



Library is often the last to learn that an article was rejected, that payment was received, or that the article has been published.

Images, Noun Project
Author by Felisberto Piazza
Journal by Andrey Vasiliev
Library by Piotrek Chuchla
Office by Dinosoft Labs
University by iconsmind.com

Use of the OA Fund

Applications for support: 182

Works supported by the fund: 133 (119 published, 14 under review)

Authors applying: 84

IUPUI Schools served: 13 of 17

(Missing: Business, Education, Law, Social Work)

Departments served: 42

IUPUI Open Access Publishing Fund Reports available from: https://scholarworks.iupui.edu/handle/1805/11935

Funds Disbursed or Encumbered

Funds distributed or encumbered: $190,607.23

Mean article processing charge: $1,713.86

Mean level of support (per article) from OA Fund: $1,433.14 (n=133)

Journals: 76

Publishers: 27

66% of funds ($126,438.62) for 5 publishers:

- PLOS: $39,434.25 (n=31)
- Nature PG (Springer): $28,803.50 (n=20)
- BioMed Central (Springer): $23,764.37 (n=14)
- JMIR Publications: $17,783.00 (n=9)
- Wiley: $16,653.50 (n=10)

IUPUI Open Access Publishing Fund Reports available from: https://scholarworks.iupui.edu/handle/1805/11935

Journals and Publishers

Journals: 76
Publishers: 27

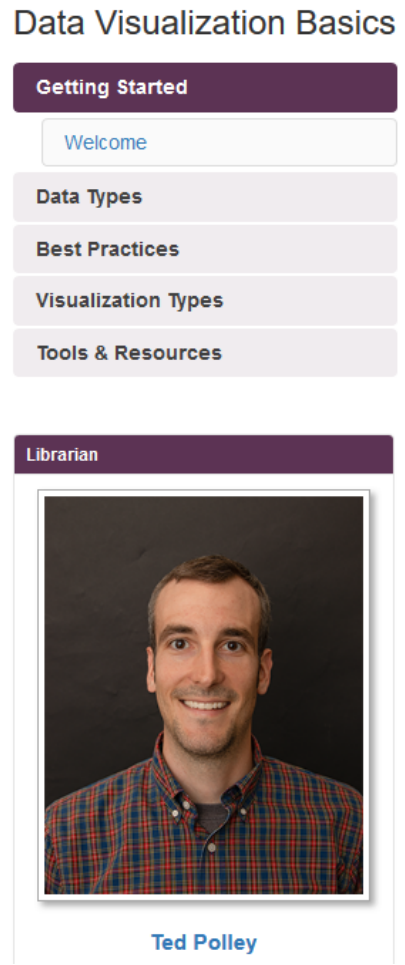
66% of funds ($126,438.62) for 5 publishers

PLOS: $39,434.25 (n=31)
Nature PG (Springer): $28,803.50 (n=20)
BioMed Central (Springer): $23,764.37 (n=14)
JMIR Publications: $17,783.00 (n=9)
Wiley: $16,653.50 (n=10)

IUPUI Open Access Publishing Fund Reports available from: https://scholarworks.iupui.edu/handle/1805/11935

Visualizations? Why are we doing this?

- Increasing interest in library support for data visualization (http://iupui.campusguides.com/data_visualization)
- Data analysis with the programming language, R (https://www.r-project.org/), has become a key component of digital scholarship workflows:
  - OA policy
  - ETD metadata
  - PubMed Linkout program ('rentrez')
  - Analysis of journal quality in annual reviews
- As our data collections grow, we're seeking more efficient ways to understand and communicate
  - Annual reports
  - Outreach
  - Strategic decisions
- R visualization in Beta
  - Developing scripts now before our data becomes unwieldy



Methods

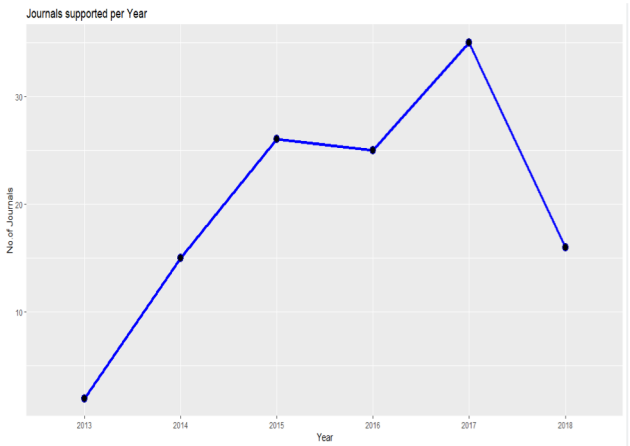
- Anonymized and cleaned data from web form using spreadsheet software and Open Refine
- IDE: R Studio

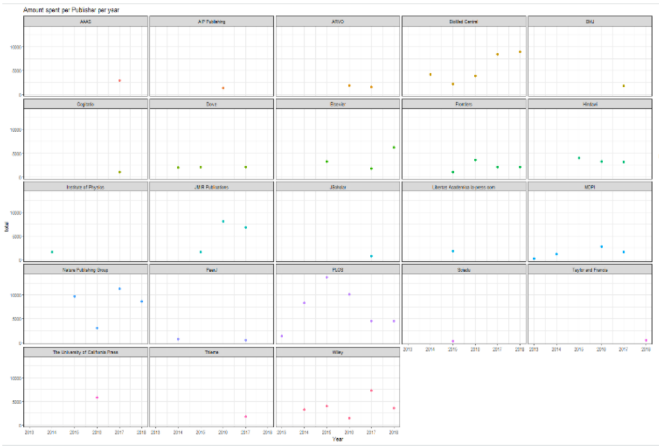
  R programming offers a satisfactory set of in-built libraries and functions for effective visualizations of data.
- Libraries : ggplot, plotly, treemapify, plyr

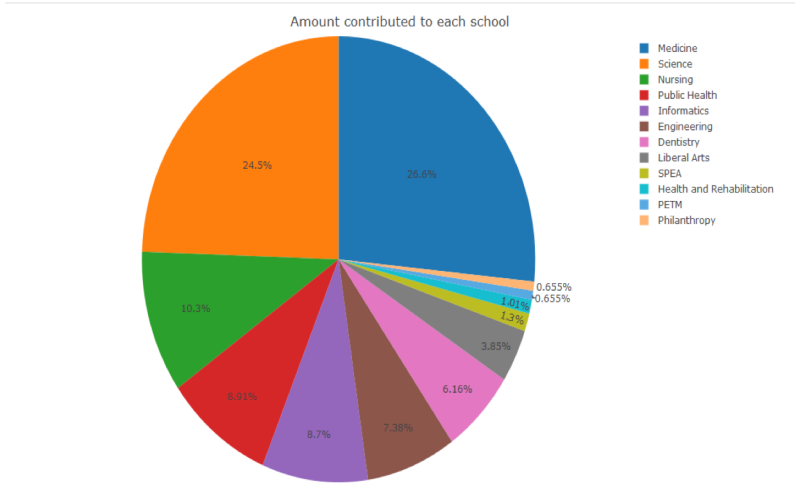
  Each library offers different functions to implement the vizualizations.

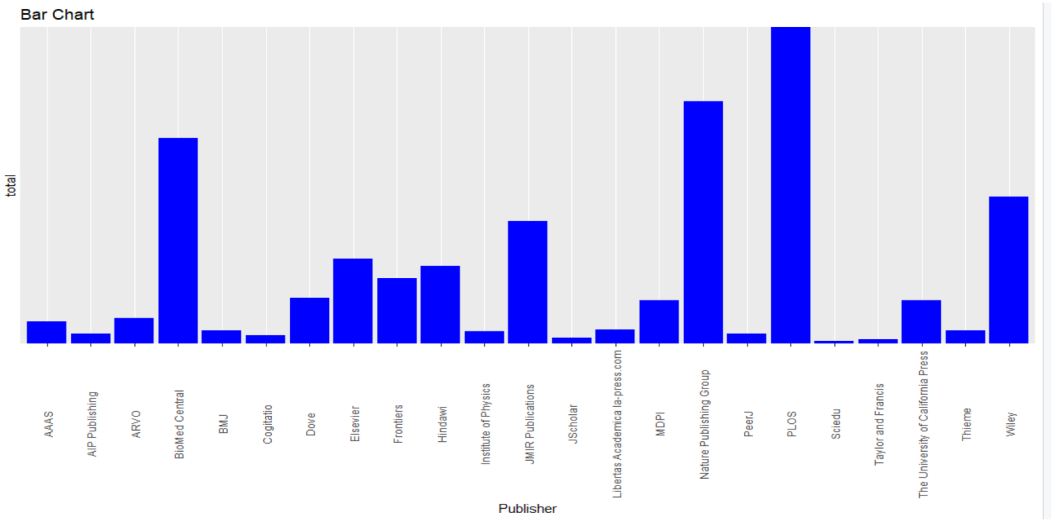
  Functions: geom_bar, plot_ly, geom_line, geom_treemap
- R scripts saved for reuse

VISUALIZATIONS



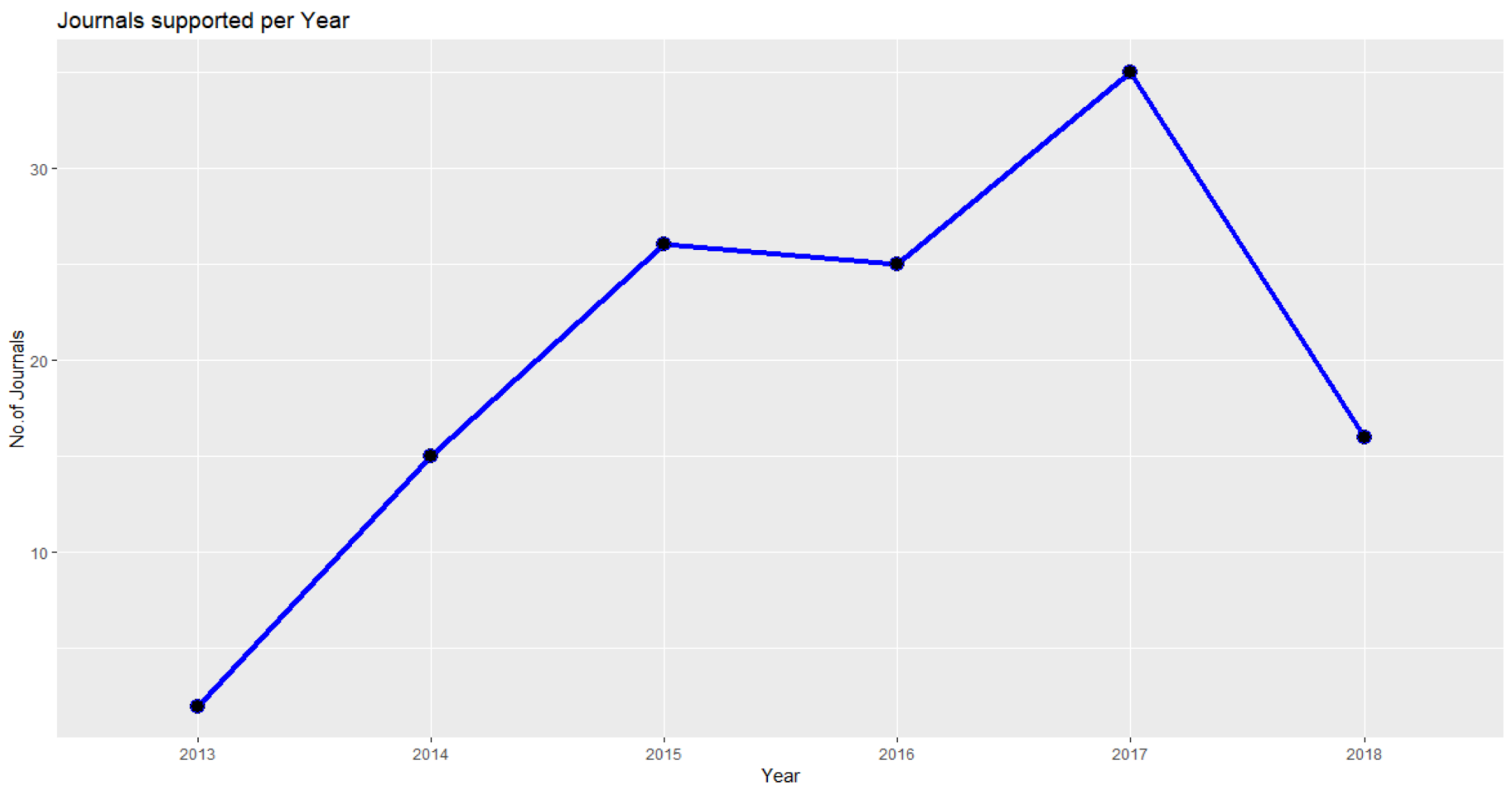




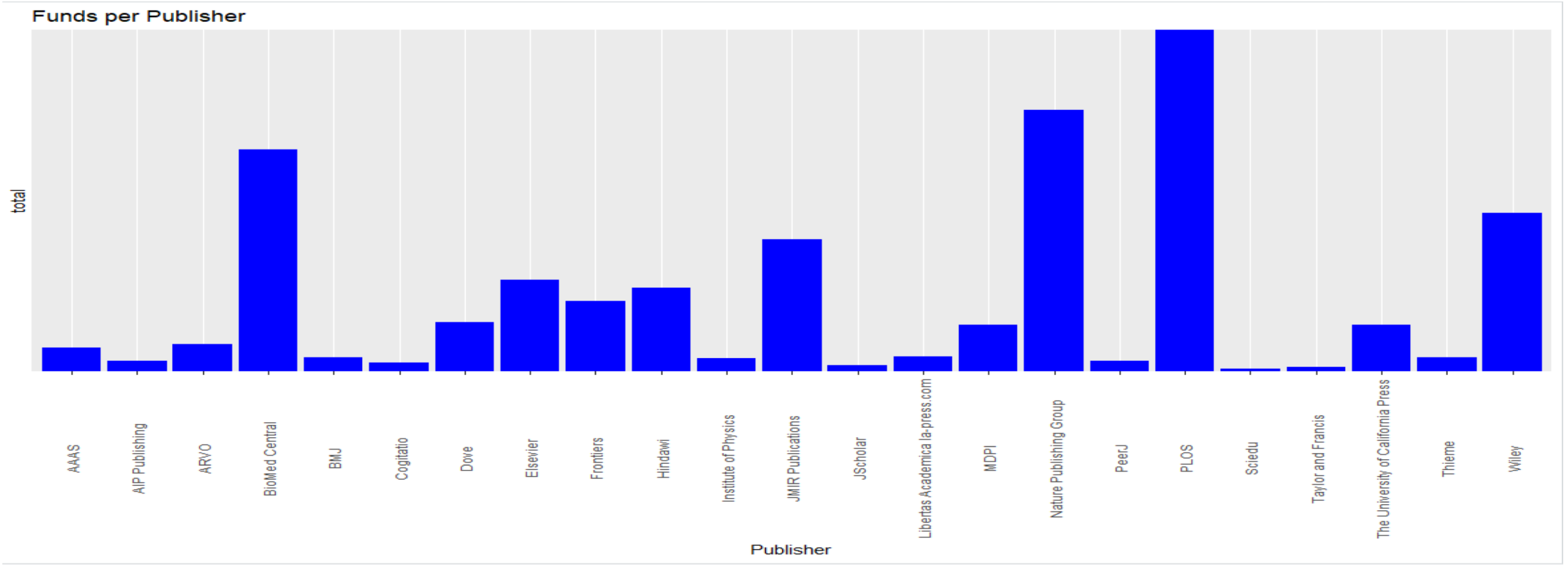


LINE CHART

[No. of Journals supported per year]



```r
#install.packages("ggplot2")

library(ggplot2)

data <- read.csv("oafund.csv", header=TRUE, sep=",")
Y <- data.frame(Year = format(as.Date(data$date, '%m/%d/%Y'), '%Y'), Journal = data$Journal)

for(i in Y$Journal)
  {
    Y$Journal <- 1
  }
j <- Y$Journal
jdf <- data.frame(aggregate(j~Year,data=Y,FUN=sum)) #Aggregate col 'j' based on the col 'Year'
jo <- jdf$j     #Assign col 'j' of jdf dataframe to jo
d <- jdf$Year

#plot
p1 <- ggplot(aes(y = jo, x = d, group = 1), data = jdf) +
      geom_line(colour="blue", size=1.5)+
      geom_point(colour="blue", size=4, shape=21, fill="black")+
      scale_x_discrete(breaks=seq(2013,2018,1)) +
      theme(text=element_text(family="sans"))

p1 + labs(x = "Year", y = "No.of Journals")+ ggtitle("Journals supported per Year")

```



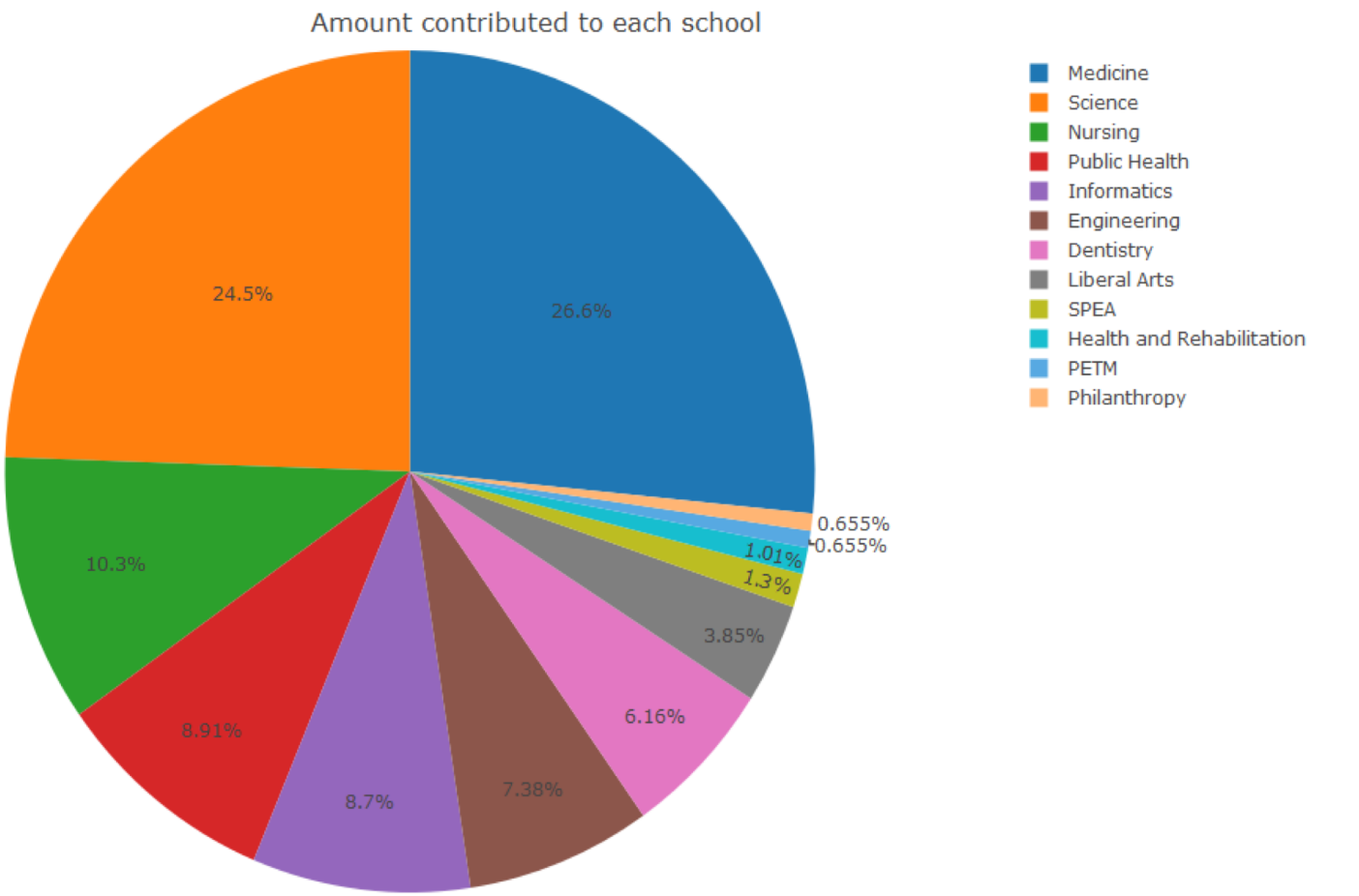

```
library(ggplot2)

data <- read.csv("oafund.csv", header=TRUE, sep=",")
p2 <- ggplot(data, aes(x = Publisher, y = total)) +
    geom_bar(stat = "identity", fill = "blue") +
    scale_x_discrete("Publisher") +
    scale_y_discrete("total", breaks = NULL)+
    theme(axis.text.x = element_text(angle = 90,   vjust = 0.5)) +
    labs(title = “Total funds per Publisher")
p2
```

BAR CHART

[Total funds per Publisher]

PIE CHART

[Amount spent per School]



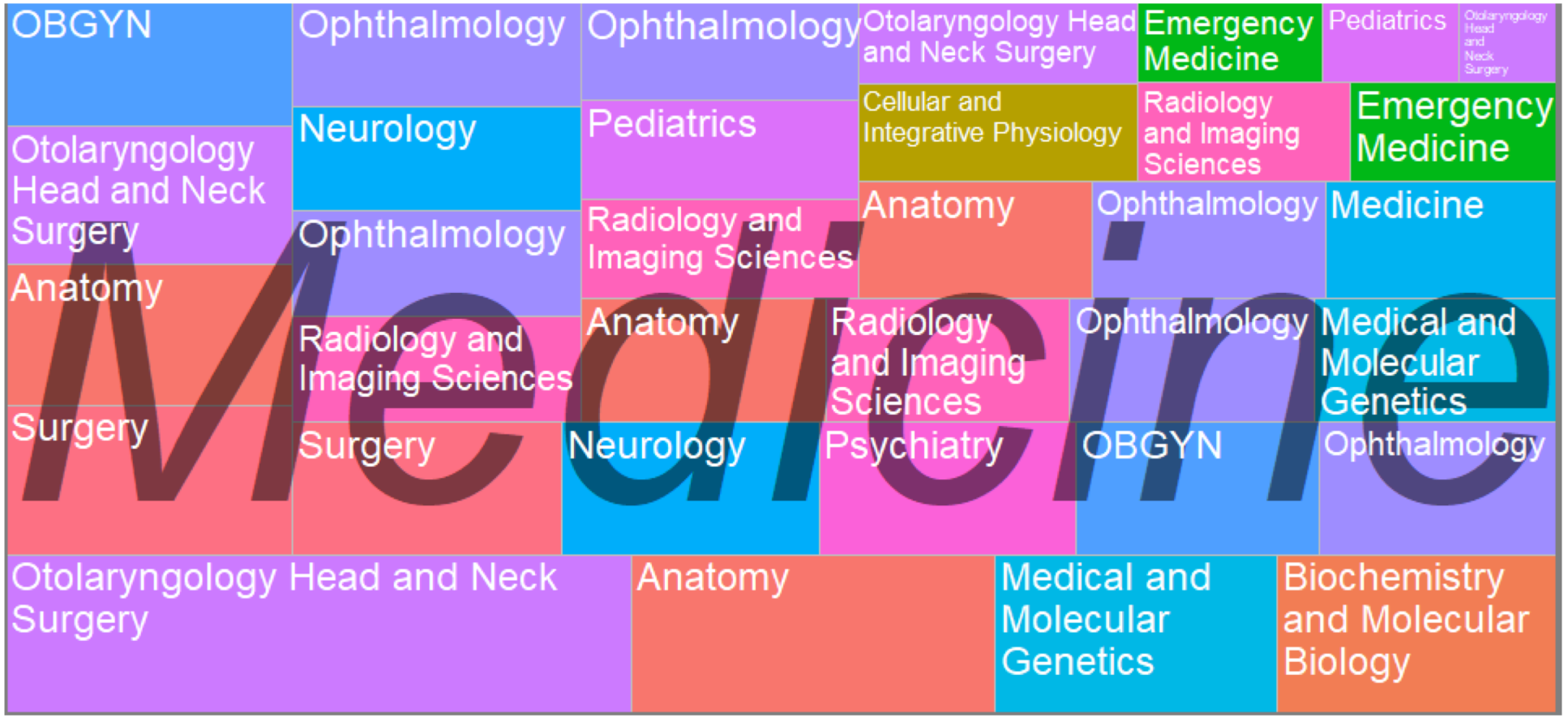

```
library(plotly)
library(assertthat)

f <- read.csv("oafund.csv")
ff <- data.frame(aggregate(total~School,data=f,FUN=sum))
p1 <- plot_ly(ff, labels = ~School, values = ~total, type = 'pie') %>%
    layout(title = 'Amount contributed to each school',
    xaxis = list(showgrid = FALSE, zeroline = FALSE, showticklabels = FALSE
    yaxis = list(showgrid = FALSE, zeroline = FALSE, showticklabels = FALSE
p1
```

TREEMAP
[Amount spent per department in each school]

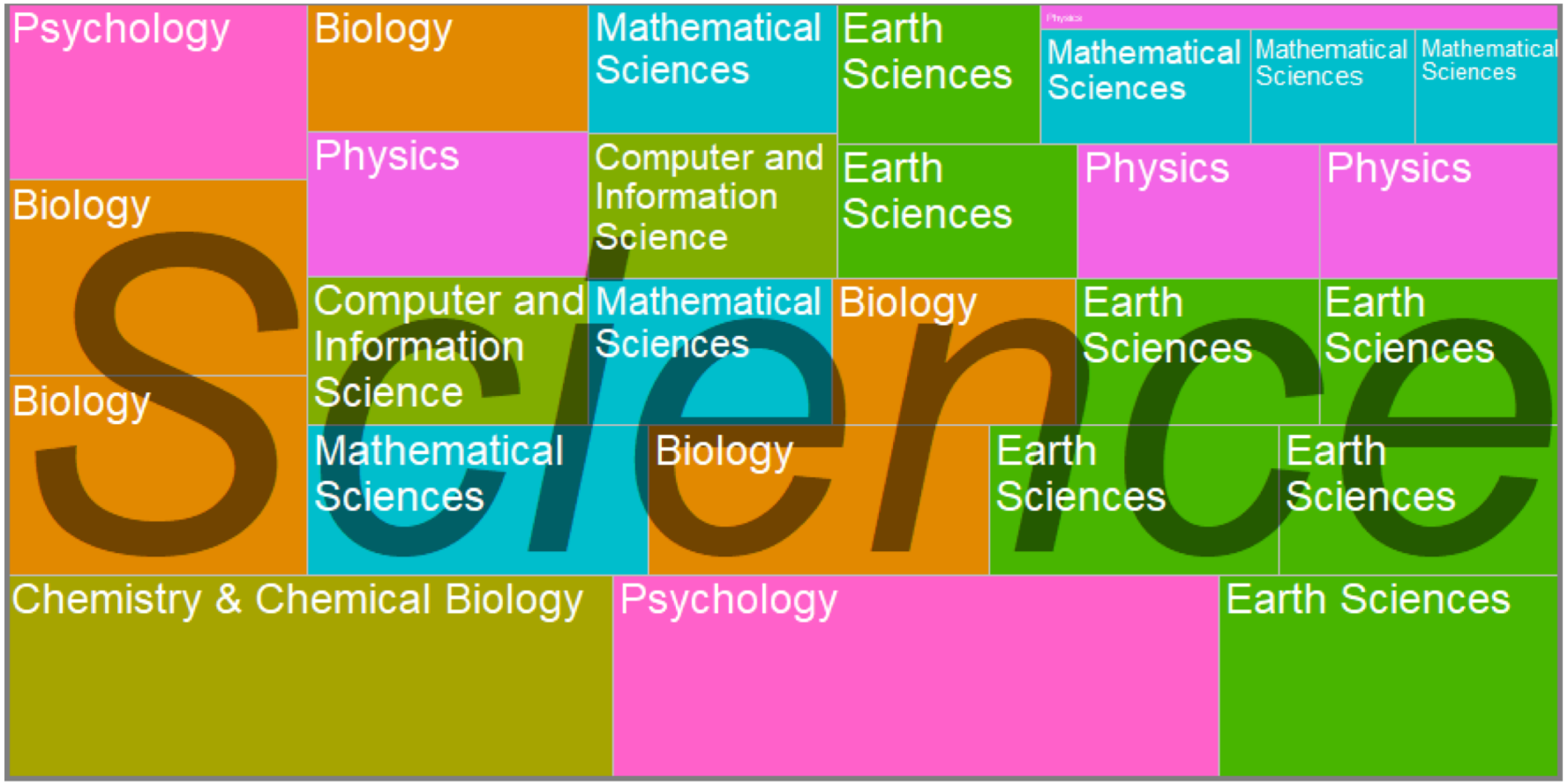
```
library(ggplot2)
library(treemapify)


data <- read.csv("oafund.csv", sep = ',', header = TRUE)
v <- ggplot(data, aes(area = total, fill = Department, label = Department, subgroup = School)) +
    guides(fill = FALSE)+
    geom_treemap() +
    geom_treemap_subgroup_border() +
    geom_treemap_subgroup_text(place = "centre", grow = T,    alpha = 0.5, colour ="black", fontface     = "italic", min.size = 0) +
   geom_treemap_text(colour = "white", place = "topleft", reflow = T)
v
```

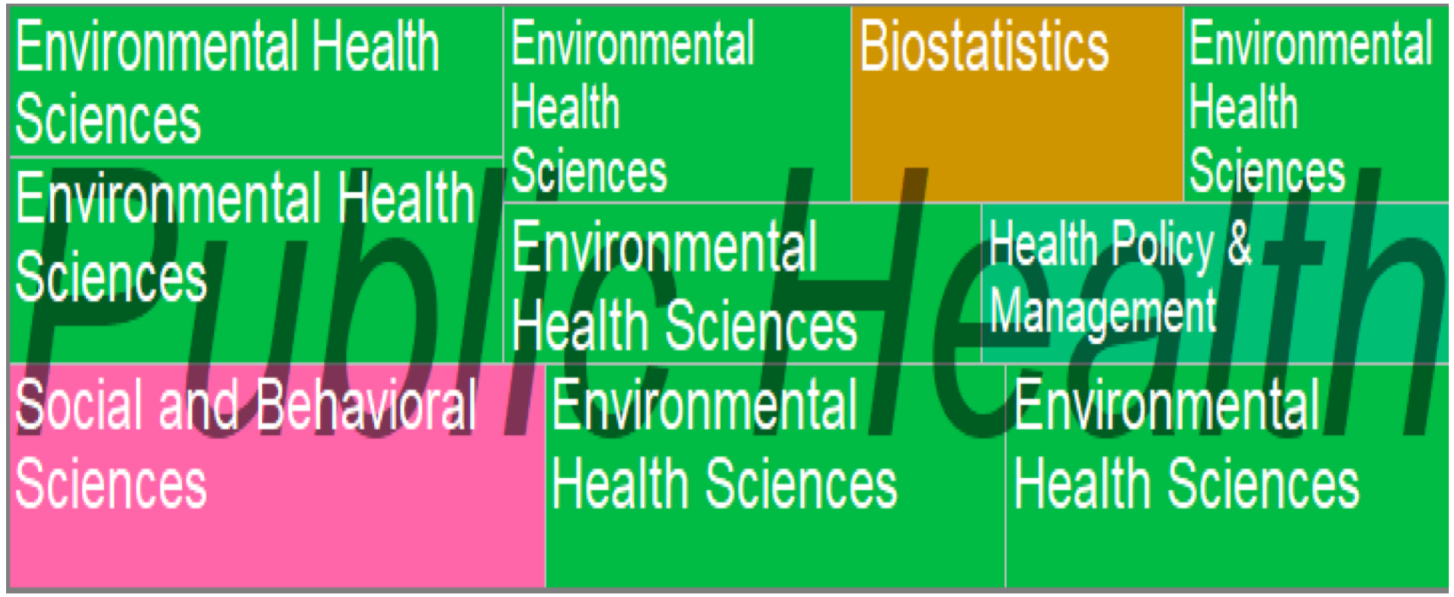

Public Health
Dentistry
Liberal Arts
SPEA
Nursing
Informatics
Engineering
Medicine
Science
Environmental Health Sciences
Biostatistics
Social and Behavioral Sciences
Health Policy & Management
Oral Pathology, Medicine and Radiology
Carilogy Operative Dentistry and Dental Public Health
Occupational Therapy
Health and Rehabilitation
Kinesiology
PETM
Philanthropy
Communication
Geography
History
Nursing
Biohealth Informatics
Human-Centered Computing
Library and Information Science
Biomedical Engineering
Computer Information and Graphics Technology
Mechanical Engineering
OBGYN
Ophthalmology
Neurology
Pediatrics
Otolaryngology Head and Neck Surgery
Emergency Medicine
Cellular and Integrative Physiology
Radiology and Imaging Sciences
Anatomy
Medicine
Surgery
Psychiatry
Medical and Molecular Genetics
Biochemistry and Molecular Biology
Psychology
Biology
Physics
Mathematical Sciences
Computer and Information Science
Earth Sciences
Chemistry & Chemical Biology

Amount spent per department in School of Medicine



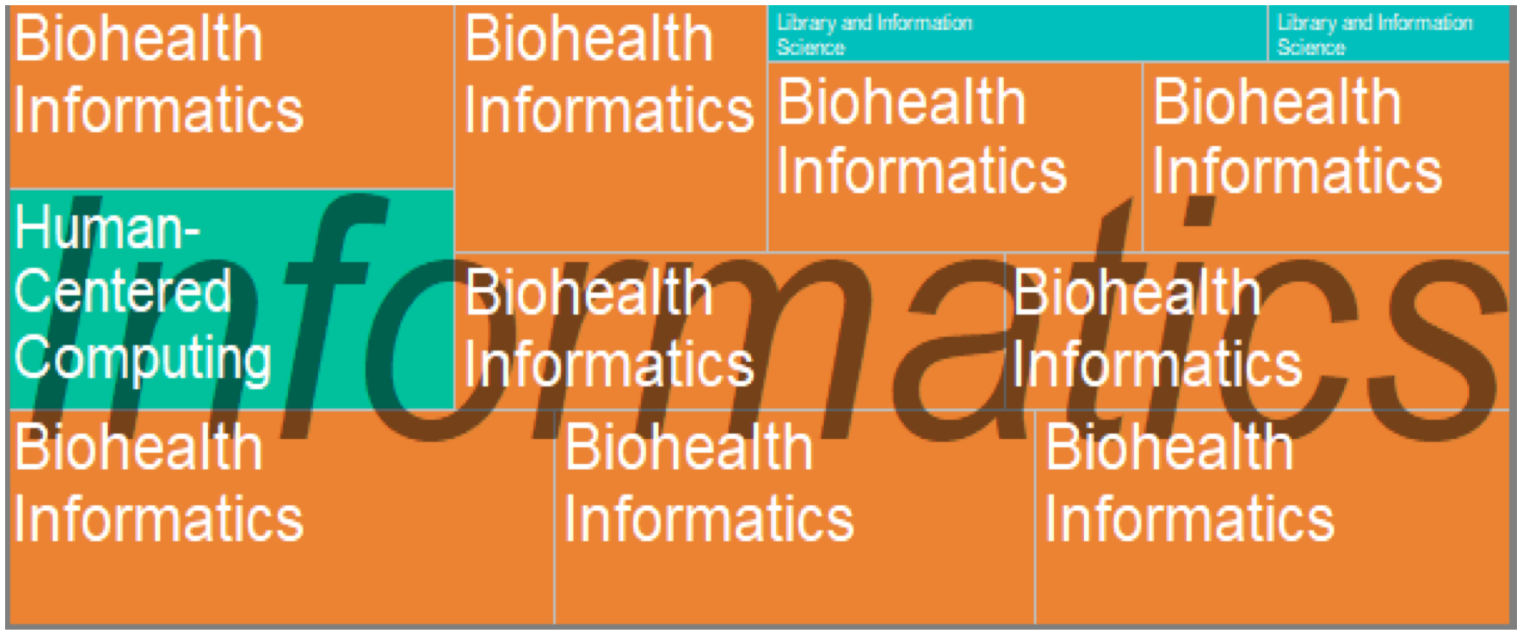
Amount spent per department in School of Science

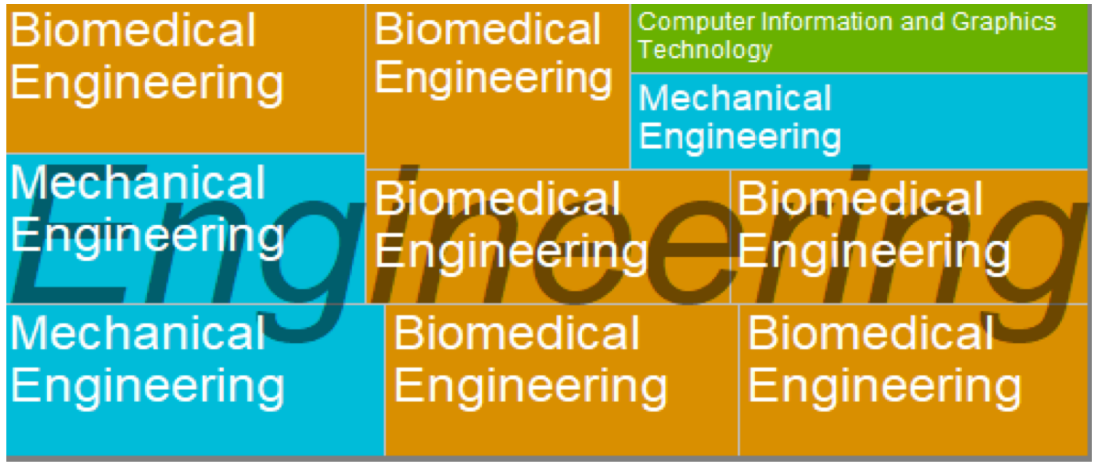




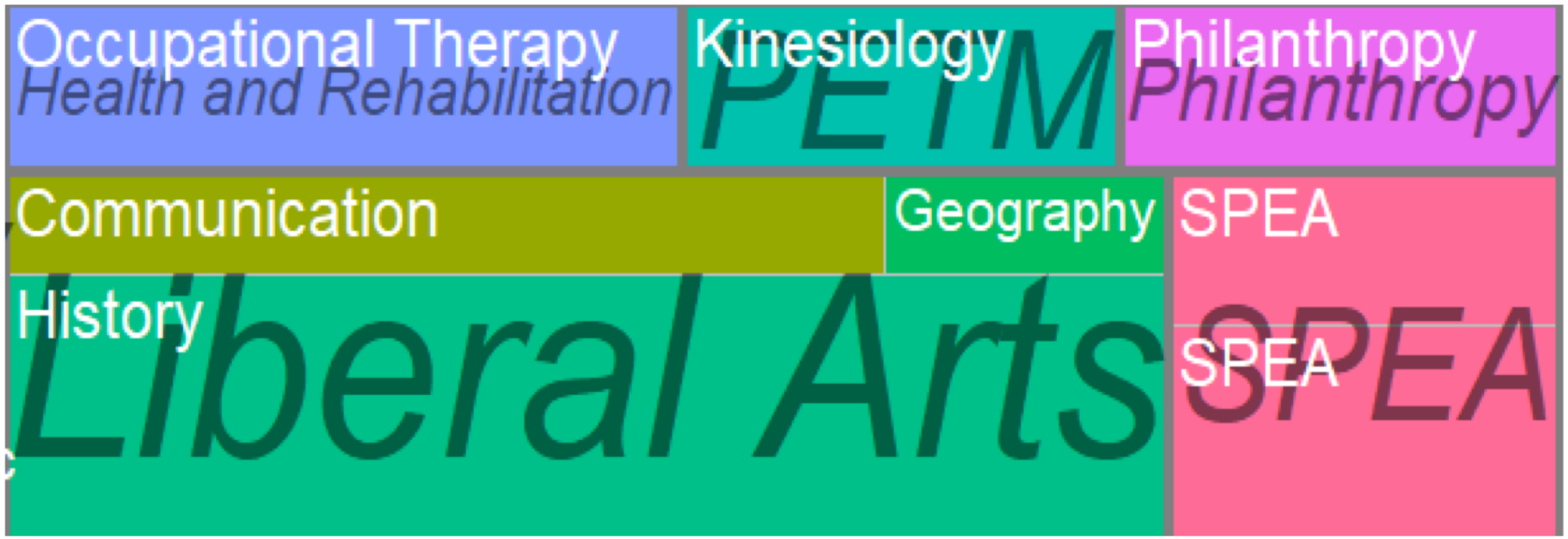
Amount spent per department in School of Public Health

Amount spent per department in School of Informatics




Biomedical Engineering
Biomedical Engineering
Computer Information and Graphics Technology
Mechanical Engineering
Mechanical Engineering
Biomedical Engineering
Biomedical Engineering
Engineering
Mechanical Engineering
Biomedical Engineering
Biomedical Engineering

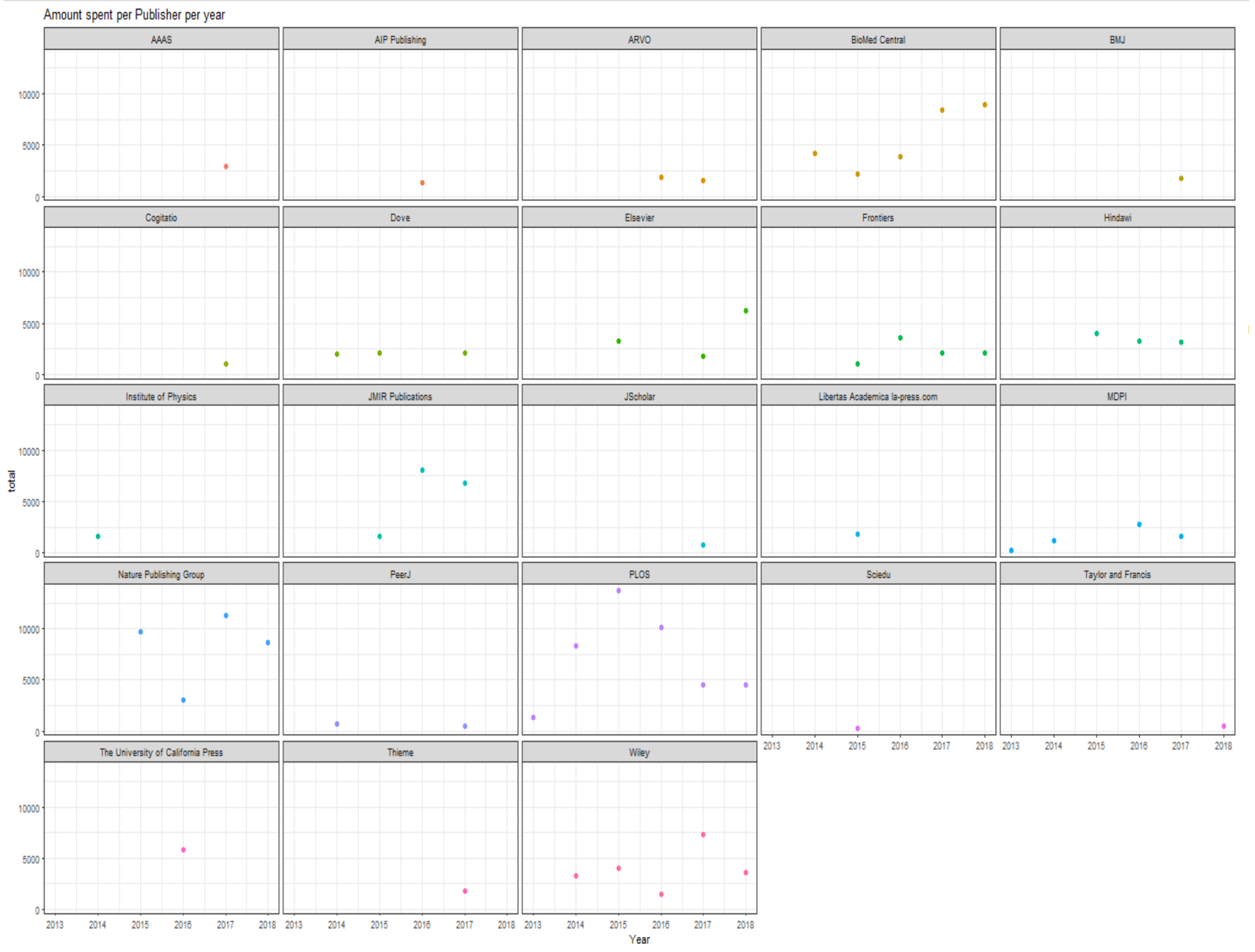

Oral Pathology, Medicine and Radiology
Oral Pathology, Medicine and Radiology
Oral Pathology, Medicine and Radiology
Oral Pathology, Medicine and Radiology
Oral Pathology, Medicine and Radiology
Dentistry
Carilogy Operative Dentistry and Dental Public Health
Carilogy Operative Dentistry and Dental Public Health


Occupational Therapy
Health and Rehabilitation
Kinesiology
PETM
Philanthropy
Philanthropy
Communication
Geography
SPEA
History
Liberal Arts
SPEA
SPEA

SCATTER –PLOT

(Amount spent per Publisher per year)

```
#install.packages("ggplot2")


library(ggplot2)


f <- read.csv("oafund.csv", header=TRUE, sep=",")
d <-  data.frame(aggregate(total~Year+Publisher, data=f, FUN=sum))
p1 <- ggplot(d, aes(x = Year, y = total)) +
    geom_point(aes(color = Publisher)) +
    scale_x_continuous("Year", breaks=seq(2013,2018,1))+
    scale_y_continuous("total")+
    theme_bw(base_size = 8) +
    labs(title="Amount spent per Publisher per year") +
    facet_wrap( ~Publisher)
p1
```

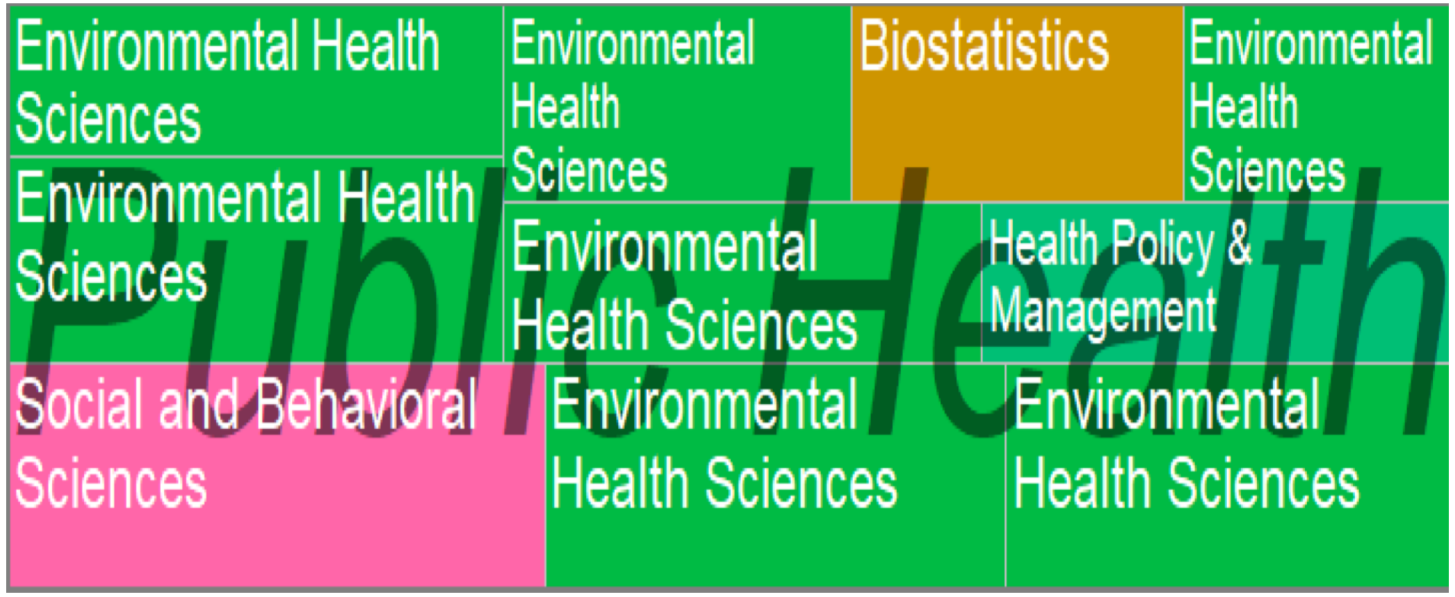


Conclusions, of a sort

What did we learned about the OA Fund from these visualizations?

- Our data is not big enough, yet … for most of the visualizations that we have tried

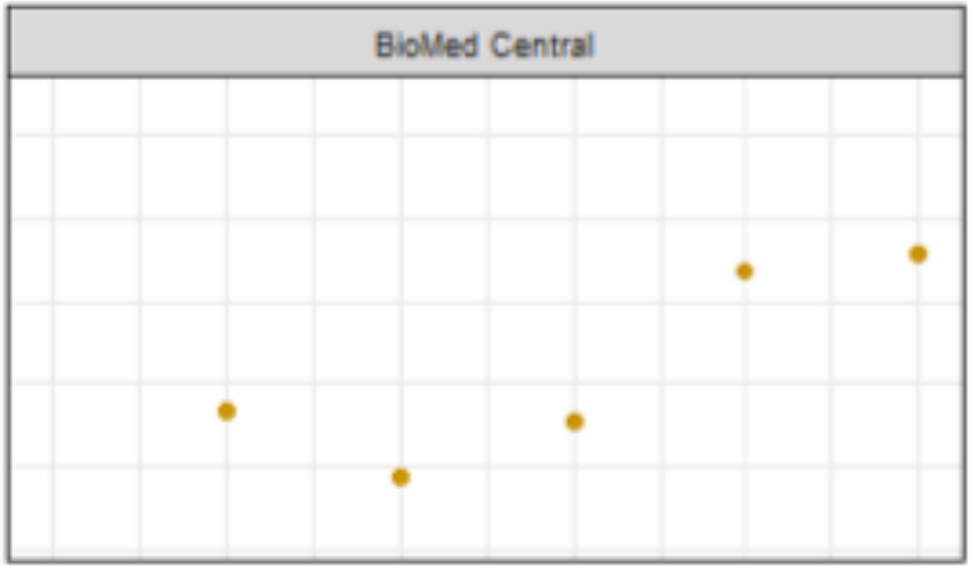
- But, we can see some things (quickly)

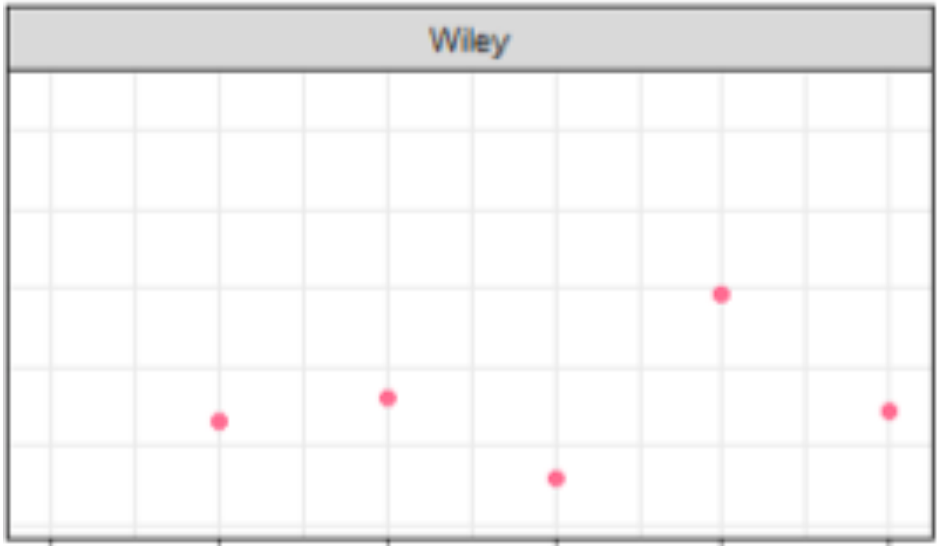


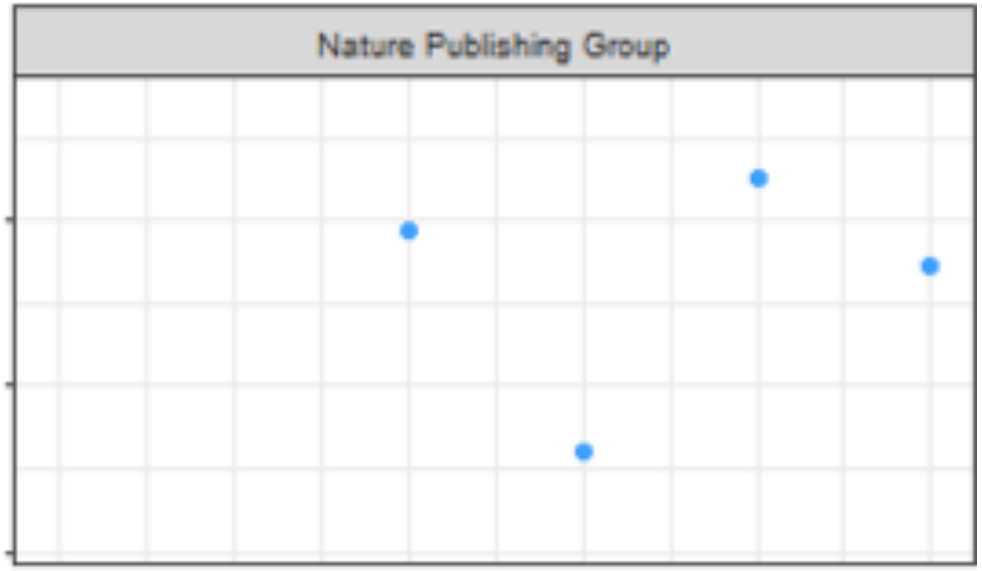
- 4 of 5 Departments in Public Health

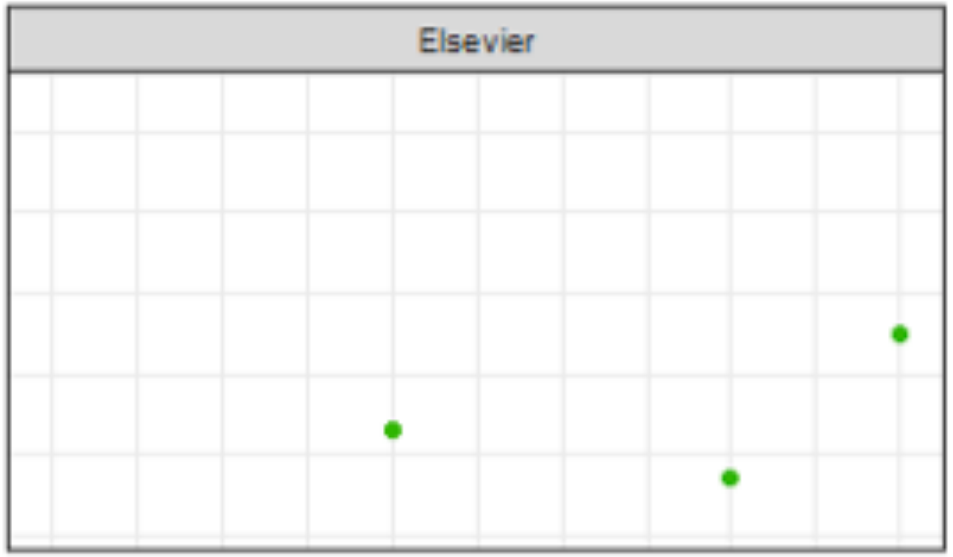
- Disproportionate representation from Environmental Health

Conclusions, of a sort

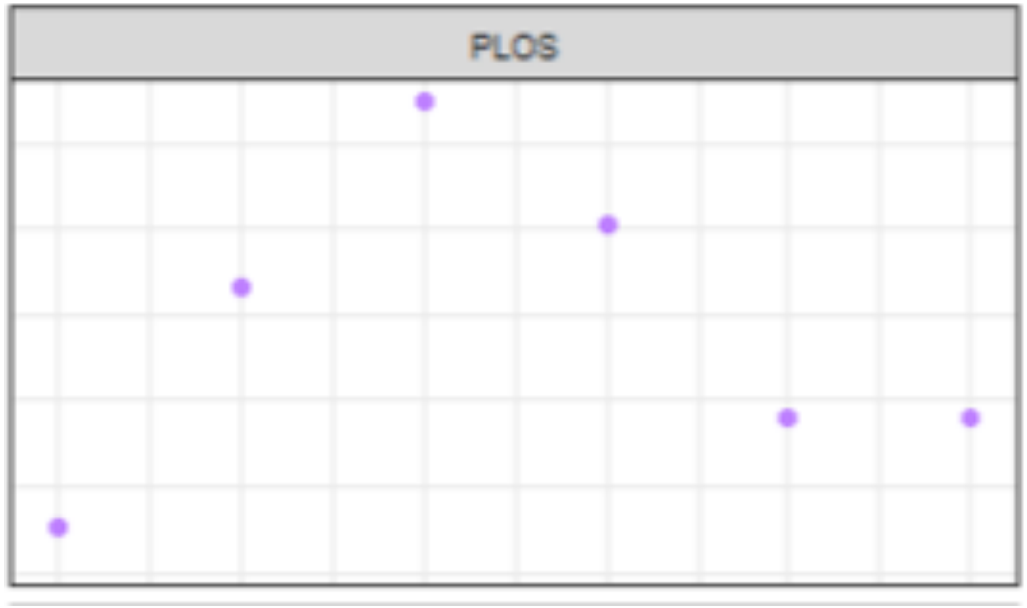




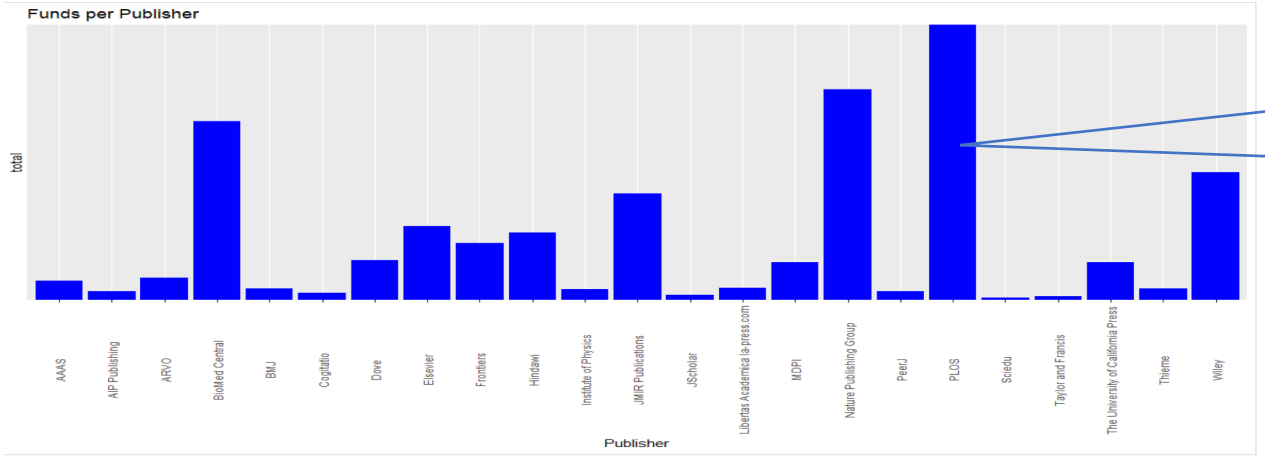




Conclusions, of a sort

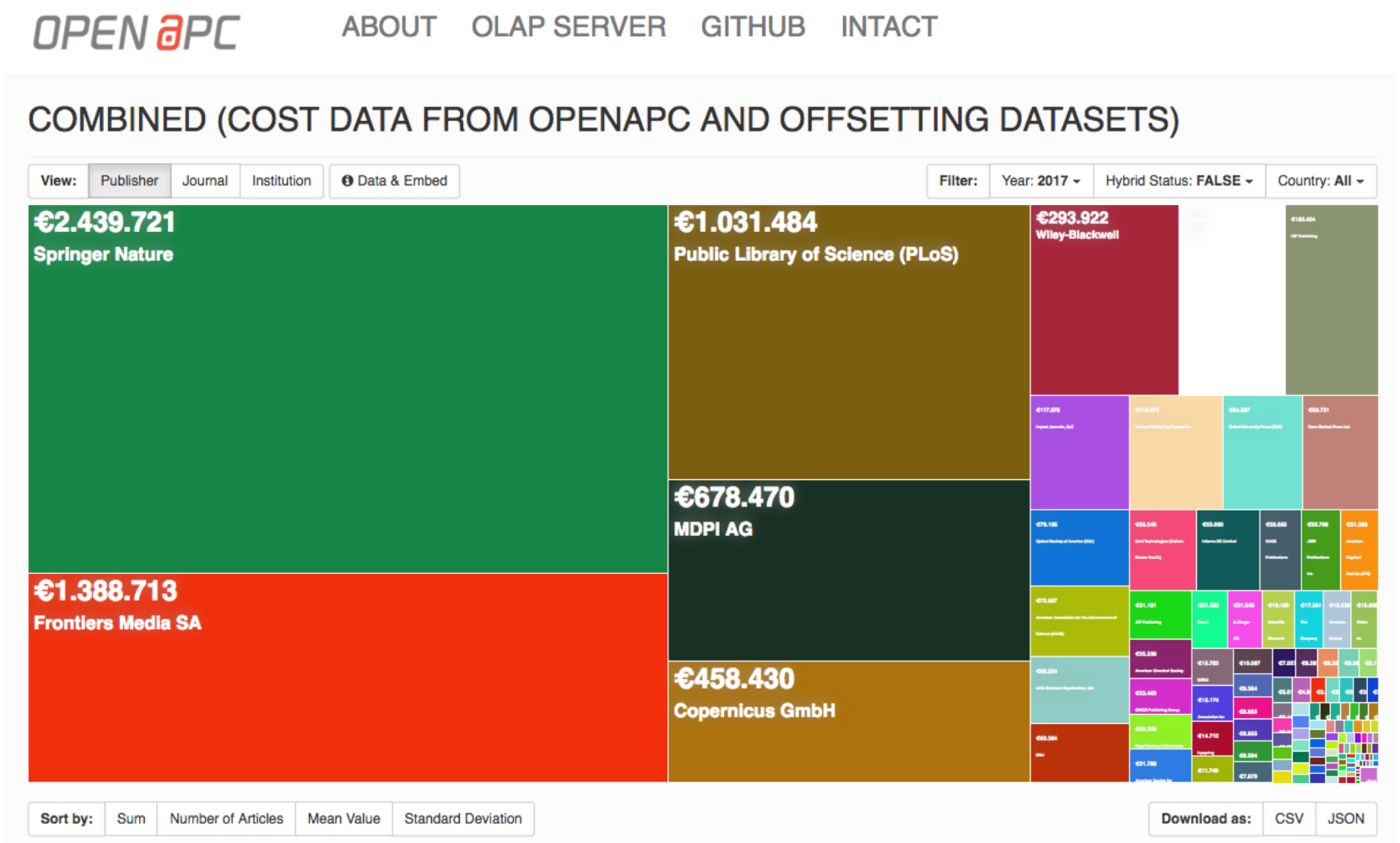


- APC expenditures at IUPUI are diversifying at the publisher level
- For IUPUI expenditures, PLOS is the only publisher with a declining trend



PLOS

What will we do next with the R scripts and data?



https://treemaps.intact-project.org/

Is the OA Fund working?

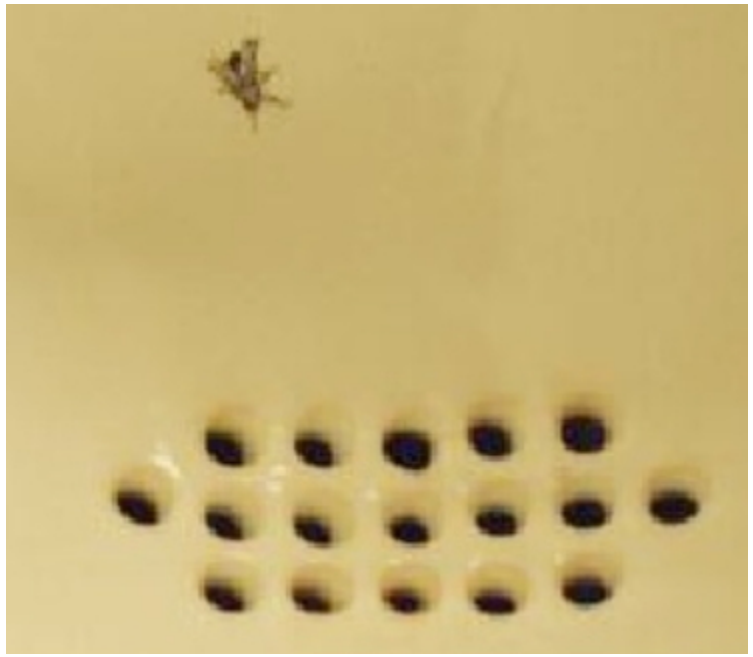
Successes

- Institutional support
- Meeting a need on campus
- Serving as a trusted, central broker
- Outreach? word-of-mouth/scaled to demand

Concerns

- Does the Fund result in a direct increase in OA at IUPUI?
- Will the OA funds contribute to a replication of the serials crisis in the OA APC publishing model?
- Will the S Plan increase demand on our fund?
- Who is missing out?

What would you do with $3,000.00 to increase OA adoption?



Open Data about the IUPUI OA Fund

Data in USD with author/department/school names:

IUPUI University Library Center for Digital Scholarship. (2018) IUPUI Open Access Fund (dataset), v1. IUPUI University Library: Indianapolis, IN. http://hdl.handle.net/11243/25

Data in Euros without author/department/school names:

Open APC, INTACT. (2018). Indiana University - Purdue University Indianapolis (IUPUI). https://treemaps.intact-project.org/apcdata/iupui/

References

- Campus Open Access Funds, SPARC. 2018. https://sparcopen.org/our-work/oa-funds/
- Compact for Open-Access Publishing Equity. 2009. http://www.oacompact.org/
- IUPUI Open Access Fund (policy). 2018. http://ulib.iupui.edu/digitalscholarship/openaccess/oafund
- IUPUI Open Access Publishing Fund Reports. 2018. https://scholarworks.iupui.edu/handle/1805/11935
- Open APC, INTACT. 2018. https://treemaps.intact-project.org/
- Polley, Ted. 2018. Data Visualization Basics (LibGuide). http://iupui.campusguides.com/data_visualization
- The R Project for Statistical Computing. 2018. https://www.r-project.org/